Note: The classification of this memorandum must be raised to [redacted] to the classification of the draft it covers.

Date 23 July, 1952

MEMORANDUM FOR CHIEF, REPORTS DIVISION

SUBJECT: Transmission of Draft Report

ENCLOSURE: Project No. IP-313 Manufacture of Oil-Cooled Transformers in East Germany — 1 copy only

1. Enclosure is forwarded herewith for review and publication.

2. This draft report has been coordinated informally with the organizations checked below: none

Within CNR:				Within CIA:		Outside CIA:	
D/A		D/G		O/CI		State (OIR)	
D/M		D/Z		C/SI		Army (G-2)	
D/S		D/B		O/NE		Navy (ONI)	
D/I				Other ____		Air (OIN)	
						Other ____	

3. Maps and/or Graphics to be included in this report and [illegible] completed for their production by the Geographic Division are as follows:

none

4. The following distribution of the completed report is recommended:

	Standard	Other (specify)
X	Requester	
X	US Officials only	[redacted]
		[redacted]

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5. Responsibility for consultation with D/R, while the project is under review, is assigned to [redacted], ext. 3696

6. Comments: Copy to be retyped in D/R, as per agreement between [redacted] 25X1A
25X1A D/R, 23 July, 1952

[redacted]
Chief
Industrial Division

25X1A
[redacted]

INTELLIGENCE PROJECT 313

MANUFACTURE OF OIL-COOLED TRANSFORMERS

IN EAST GERMANY

Statement of Problem:

This intelligence project describes the 5,000 to 40,000 kva (kilo-volt-ampere) oil-cooled transformers presently being manufactured in East Germany.

Production Facilities:

Within East Germany, there are three plants which manufacture the type of transformer under discussion here. These firms are:

(1) The VVB-VEM Fabrik fuer Transformatoren und Hochspannungsschalter (Transformers and High-Voltage Switch Plant) located in Berlin/Oberschoneweide. (This is a former AEG factory, and is frequently referred to as "TRO").

(2) The Transformatoren und Roentgenwerk (Transformer and X-Ray factory) of the HV-Elektrotechnik, located in Dresden. (Plant also referred to by its former name, Koch und Sterzel, and by the diminutive, "TraRoe").

(3) The "Sachsenwerk", located in Nidersedlitz, Land Sachsen. This is a plant of the SAG-Kabel.

The production of all transformers between the sizes of 5,000 and 40,000 kva is now at a level of about 1,750,000 kva a year.

In the past, our analysis of transformer manufacture has not been comprehensive to the point of including detailed descriptions of individual types of units, nor has any special collection effort been made in an attempt to produce such information as oil specifications, weights, dimensions, operating characteristics, or physical characteristics.

For these reasons, our presentation in this paper will necessarily be limited to general descriptive material, although possible sources for exploitation will be mentioned in a subsequent section of the paper.

Materials for Transformer Manufacture:

There are four critical materials used in the manufacture of transformers upon which we have collected information; these are (1) Electrical Porcelains, (2) Transformer Oil, (3) Low-Loss (Transformer Sheet) Steel, and (4) Insulating

Papers. These materials will be discussed individually.

(1) Electrical Porcelains.

Porcelain is used in transformers for the large stand-off insulators mounted atop the apparatus to support and insulate the current conductors. There seems to be no difficulty in obtaining a supply of porcelains in East Germany -- most of the porcelains for this use apparently come from the Porcelain Factory in Koeppelsdorf and are comparable in quality to those manufactured in the United States. 2/

(2) Transformer Oil.

Many reports have been made on the adequacy of the supply of transformer oil in East Germany, and on the quality of the oil. We know, for instance, that TRO, prior to January 1951, got transformer oil from some point in Saxony. This oil had a "Stockpunkt" (Rigidity Point - probably equivalent to our "pour point") of minus 22 degrees Centigrade. This oil was unsatisfactory for use in Russia, and is now being replaced by an Austrian oil (supplied by an unknown firm in that country) which has a Stockpunkt of minus 40 degrees Centigrade. We have also had reports which suggest that some of the oil comes from Pardubice in Czechoslovakia. 3/

(3) Low-Loss (Transformer Sheet) Steels.

The most sensitive bottleneck in the entire program for the production of transformers in East Germany has been, and continues to be, the shortage of transformer sheet metal. Efforts have been made to obtain this metal from every possible supplier, including non-Bloc sources, but these efforts have not been entirely successful. In order that the quotas assigned to the three plants named above may be met, both cannibalization of old transformers for their core metal, and the import of such metal from the Soviet specifically for incorporation into reparations transformers have been resorted to. 4/ 5/

The domestically produced transformer metal has a loss figure, according to one reliable source, of 1.3 watts per kilogram. This is about equal to a US rating of 0.74 watts per pound, which is poorer than the worst grade of US transformer core metal for which manufacturers' guarantees are commonly quoted. 6/ East Germany can sometimes import from non-Bloc countries, as mentioned before, a somewhat better quality of metal, but the transformers built there will be certainly no smaller than 1/3 greater in weight and in volume than comparable US designs for

the same ~~kilovolt-ampere~~ kva rating.

(4) Insulating Paper.

The Fein- und Zigarettenpapierfabrik AG, (the Fine and Cigarette Paper Factory) in Kabeln bei Muskau, is the chief source of supply for insulating paper in East Germany,[3] but the paper is also obtained from Osnabrück (producing factory not known).[2] It would appear that the paper from this latter source is of better quality than that from the former, and would probably be used in low-voltage apparatus for the most part. There seems to be no difficulty in obtaining supply. ~~It is true that~~ Although there is a shortage of copper wire in East Germany, a fact that often plagues the manufacturers of transformers, the above materials ~~however~~ are the ones which either control production or are those in which marked differences occur in ~~from~~ types or qualities when compared with the US product. ~~in the United States occur.~~

Sources of Information:

As far as we have been able to discover, there has been no detailed analysis ~~that has been made~~ for intelligence agencies of actual power transformers manufactured in East Germany, although an analysis of five radio transformers has apparently been made for the Air Force.[8] There is no file of blueprints or specification sheets within CIA.

A possible source for blueprints and, possibly, specification sheets would be the Army Map Service. This source has not been searched for such information.

Another source of blueprints and other data would be the Library of Congress. There might be information there, if not current, on the transformers formerly manufactured at these plants in the period before nationalization, the designs of which have no doubt been continued. Due to the ~~lack of time~~, this source, however, was not searched in connection with this project, either.

BIBLIOGRAPHY

1. CIA/RR Project 45-51, 1 ~~February~~ 1952, Secret
2. CIA, [redacted] August 1951, ~~Secret~~
3. CIA, [redacted] Secret/Control - US Officials Only
4. CIA, [redacted] 1950, Secret/Control - US Officials Only
5. CIA, [redacted] 951, Secret/Control - US Officials Only
6. CIA, [redacted], Secret
7. CIA, [redacted] 1951, Secret
8. [redacted] Secret

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Original + 1 cc to OTS (Mr [redacted]) 8/4

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1 cc to [redacted]

1 cc to [redacted] 1/cc. 8/11